Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**WEB QUEST- DUE AT END OF LIBRARY DAY 2 (3/14)**

Go to http://evolution.berkeley.edu

This website is a treasure trove of information about evolution. I encourage you to explore this website on your own time.

A. Click on “Evolution 101,” Click on “An Introduction to Evolution”

1. Simply put, biological evolution is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

2. What is the central idea of evolution?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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B. Click on “Mechanisms,” which is on the side of the page

Click “Next” on the top right corner

1. Evolution only occurs when there is a change in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ within a \_\_\_\_\_\_\_\_\_\_\_ over time.

2. Which of the two scenarios is an example of evolution and why?

C. Click “Next.”

What are the four processes for evolutionary change?

1.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

D. Click “Next”

Genetic Variation is key to evolutionary change. What are the three sources of genetic variation (mechanisms)? YOU WILL NEED TO KNOW THIS FOR YOUR PROJECT!!

1.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E. Click “Next”

1. A mutation is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

2. What is the function of DNA?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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3. What can be the result(s) of a DNA mutation? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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F. Click “Next”

What effect can a mutation have on populations? Give an example of each one.

G. Click “Next”

Explain what can cause a mutation and then click “Next.” (write out the paragraph)

Gene flow, also called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, is any movement of \_\_\_\_\_\_\_\_\_\_\_\_ from one \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

to another. Gene flow includes lots of different kinds of events, such as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ being blown to a

new destination or people moving to new cities or countries. If \_\_\_\_\_\_\_\_\_\_\_ are carried to a population where

those genes previously did not \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ can be a very important source of

genetic \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. In the graphic on the website, the gene for \_\_\_\_\_\_\_\_\_\_\_\_\_\_ coloration moves

from one population to another.

H. Click “Next”

How does sex produce variation and diversity in a population?

I. Click “Next” until you get to “Genetic Drift”

In any population, some individuals will have more kids than other individuals (just by chance). Some of those

individuals will be “lucky” and survive. Explain the cartoon and how it shows this idea.

J. Click “Next”

Natural Selection is the most important mechanism behind evolution. This webpage gives you an example of

natural selection involving beetles. Read the descriptions and look at the cartoons. Explain what has

happened to this population of beetles starting from the initial population.

K. Click “Next”

Give two examples of modern day natural selection.

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

L. Click “Next”

Fitness is an often misunderstood term. It does not necessarily mean that the fittest individual is the

strongest. What does fitness mean?

M. Patterns of evolutionary selection

<http://www.sparknotes.com/biology/evolution/naturalselection/section1.html>

Draw what each of the types of selection look like and briefly describe each one. YOU WILL NEED TO KNOW THIS FOR YOUR PROJECT!!!

Stabilizing Directional Disruptive

N. Go to this website: http://science.discovery.com/interactives/literacy/darwin/darwin.html

O. Survival Game: Who wants to live a million years?

You will now play this survival game to model evolution. This game is not easy so I would be sure to look at the hints. Also, when the game starts be sure to pay attention to the environment, the years that have gone by, and what hints Darwin gives you. Finally, there is one part of the game called the “Life Preserver.” This is not accurate as far as evolution is concerned, but will help you win the game. Note: There appears to be a slight glitch in the game making it difficult to win but not impossible.

1. Notice that there is initially a lot of variation in the population. What are some variations that you see?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Choose your population.

1. The animals with \_\_\_\_\_\_\_\_\_\_\_\_\_\_ most suited to the new \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ will\_\_\_\_\_\_\_\_\_\_\_\_.

2. After the first cycle (≈ 140,000 years), what has happened to the population of animals?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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3. After the second cycle (≈400000 years), what has happened to the population of animals?

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4. If your animals died (which they probably did), why did they die?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

5. Play the game again. How long could you keep your animals alive? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

6. Why did some animals die, while others thrived? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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7. Why did the physical characteristics (phenotypes) of the overall population change? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

P: Go to the website and play the monster game. <http://www.bbsrc.ac.uk/society/schools/keystage12/darwin/monster.aspx>

List each of it adaptations and how they helped your monster survive, or how they prevented your monster from being successful.

Mouth-\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Nose-\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Eyes-\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Ears-\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Peppered Moth Simulation at [**peppermoths.weebly.com**](http://peppermoths.weebly.com/)

## Instructions: Click the link below to read more information on Kettlewell's study of moths. Click on the icon with the bird on it. At the end, you will run two simulations for 5 minutes each, during this time you will play the part of a bluejay that eats moths.

After 5 minutes record the % of dark moths and light moths - you will need this information later.

